WHAT IS CLAIMED IS:

~~Patent claims~~

1. A method for isolating nucleic acids from a sample comprising the following steps

A) mixing the sample with a water-insoluble polymer which is not ionic in the basic and neutral range, at a pH of 7 or less, with the nucleic acids being adsorbed,

B) separating off the water-insoluble polymer and

C) mixing the water-insoluble polymer with an aqueous phase with a pH of greater than 7, with the adsorbed nucleic acids being liberated,

characterized in that the water-insoluble polymer is a bead polymer with an average particle size of from 3 to 100 µm and consists of polymerized units of

a) 5 to 98% by weight of amino monomer
b) 0.3 to 30% by weight of crosslinker and
c) 0 to 93% by weight of vinyl monomer.

2. A method as claimed in claim 1, characterized in that the biological material is lysed after method step A).

3. A method for isolating nucleic acids comprising steps A), B) and C) as claimed in claims 1 and 2, characterized in that the polymer is a water-soluble, macroporous bead polymer with an average particle size of from 3 to 100 µm and a specific surface area measured by the BET method of from 5 to 500 m^2/g and consists of polymerized units of

a) 5 to 98% by weight of amino monomer

b) 0.3 to 30% by weight of crosslinker and

c1) 0 to 93% by weight of hydrophobic vinyl monomer

or in that the water-insoluble polymer consists of

bead polymer which is able to swell in water well and has an average particle size of from 3 to 100 µm, and which consists of polymerized units of

a) 5 to 79.5% by weight of amino monomer

b) 0.3 to 10% by weight of crosslinker and

c2) 10 to 93% by weight of hydrophilic vinyl monomer.

4. A water-insoluble, macroporous bead polymer with an average particle size of from 3 to 100 µm, a pore diameter of from 10 to 1000 nm and a specific surface area measured by the BET method of from 5 to 500 m^2/g, characterized in that it consists of polymerized units of

a) 5 to 98% by weight of amino monomer

b) 2 to 30% by weight of crosslinker and

c1) 0 to 93% by weight of hydrophobic vinyl monomer.

5. A bead polymer which is insoluble in water but swellable in water and has an average particle size of from 3 to 100 µm, characterized in that it consists of polymerized units of

a) 5 to 79.7% by weight of amino monomer

b) 0.3 to 10% by weight of crosslinker and

c2) 10 to 93% by weight of hydrophilic vinyl monomer.

6. A method for preparing water-insoluble, macroporous bead polymers with an average particle size of from 3 to 100 µm, a pore diameter of from 10 to

1000 nm and a specific surface area measured by the BET method of from 5 to 500 m^2/g, characterized in that a mixture of

a) 5 to 98 parts by weight of amino monomer
b) 2 to 30 parts by weight of crosslinker
c1) 0 to 93 parts by weight of hydrophobic vinyl monomer
d) 10 - 150 parts by weight of porogen and
e) 0.1 – 2.5 parts by weight of free-radical former

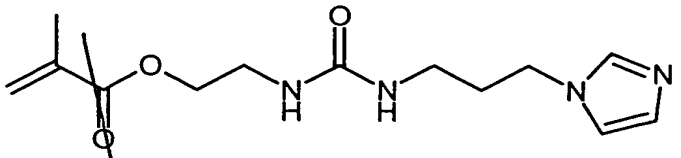
is dispersed in an aqueous medium using a protective colloid, subsequently the resulting dispersion is polymerized by heating to the decomposition temperature of the free-radical former and, after the polymerization has taken place, the porogen is removed by extraction and/or evaporation.

7. A method for preparing bead polymers which are insoluble but swellable in water and have an average particle size of from 3 to 100 µm, characterized in that a mixture of

a) 5 to 79.7% by weight of amino monomer
b) 0.3 to 10% by weight of crosslinker and
c2) 10 to 93% by weight of hydrophilic vinyl monomer
d) 10-150 parts by weight of solvent and
e) 0.1 – 2.5 parts by weight of free-radical former

is dispersed in an aqueous medium using a protective colloid, subsequently the resulting dispersion is polymerized by heating to the decomposition temperature of the free-radical former and, after polymerization has taken place, the solvent is removed by extraction and/or evaporation.

8. An amino monomer of formula (I)



(I).

9. A method for preparing amino monomer of the formula (I) as claimed in claim 8, characterized in that 2-isocyanatoethyl methacrylate is reacted with 3-aminopropylimidazole.

10. The use of water-insoluble, macroporous bead polymers with an average particle size of from 3 to 100 µm, a pore diameter of from 10 to 1000 nm and a specific surface area measured by the BET method of from 5 to 500 m^2/g, consisting of polymerized units of

a) 5 to 98% by weight of amino monomer
b) 2 to 30% by weight of crosslinker
c1) 0 to 93% by weight of hydrophobic vinyl monomer

or of bead polymers which are insoluble but swellable in water and have an average particle size of from 3 to 100 µm, consisting of polymerized units of

a) 5 to 79.7% by weight of amino monomer
b) 0.3 to 10% by weight of crosslinker and
c2) 10 to 93% by weight of hydrophilic vinyl monomer,

for isolating nucleic acids from a sample.

11. A composition for isolating nucleic acids from a sample comprising water-insoluble macroporous bead polymers with an average particle size of from 3 to 100 µm, a pore diameter of from 10 to 1000 nm and a specific surface area

measured by the BET method of from 5 to 500 m^2/g, consisting of polymerized units of

a) 5 to 98% by weight of amino monomer

b) 2 to 30% by weight of crosslinker

c1) 0 to 93% by weight of hydrophobic vinyl monomer

or of bead polymers which are insoluble but swellable in water and have an average particle size of from 3 to 100 μm, consisting of polymerized units of

a) 5 to 79.7% by weight of amino monomer

b) 0.3 to 10% by weight of crosslinker and

c2) 10 to 93% by weight of hydrophilic vinyl monomer.

Add A1)